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ABSTRACT

Analysis of the available data suggests that New York's elementary and secondary schools, taken as a whole, compiled a good record of achievement during the 1982-83 school year. Three kinds of test data were analyzed. One was the result of a study which involved the collection of scores on three commercially available standardized tests: the California Achievement Tests, the Iowa Tests of Basic Skills, and the Metropolitan Achievement Tests. This study compared New York pupils with pupils nationwide, 1973-1983. The second consisted of scores from the New York Pupil Evaluation Program, the Regents Competency Tests, and the Regents Examinations. The third was a by-product of national programs that identify outstanding pupils. These programs include the College Board Scholastic Aptitude Test, Achievement Tests, and Advanced Placement Program; the National Merit Scholarship competition; and the Westinghouse Science Talent Search. In this report, the 1982-83 results for each of these quality indicators are summarized. (BW)

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# Student Achievement in New York State

## 1982-83

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Division of Educational Testing
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## Student Achievement in New York State: 1982-83

A report on student achievement can also be a report on the effectiveness of schools provided that two considerations are kept in mind. First, in addition to school effectiveness, there are other variables that affect test scores. The most obvious is the diligence with which students pursue their studies. Student ability and experience also have major roles to play.

Second, not all of the intended outcomes of instruction can be measured by tests. For example, one important goal of education is to develop students' respect for other social, cultural, and ethnic groups, but test scores cannot reflect the extent to which this goal has been achieved. The attainment of other goals, such as those related to civic responsibility, often cannot be properly assessed until after the students have completed school.

Nevertheless, there are probably no better indicators of school quality than the results of paper-and-pencil tests. Analysis of the available data suggests that New York State's elementary and secondary schools, taken as a whole, compiled a good record of achievement during the 1982-83 school year.

Three kinds of test data are available. One is the result of a special study conducted during the 1982-83 school year, which involved the collection of scores on three commercially-published standardized tests. This study compared New York State pupils with pupils nationwide and examined the change that has occurred since 1973.

The second consists of scores obtained on New York State tests. These scores may be used to analyze achievement over a period of years or to compare schools or school districts within New York State. Included in this category are the Pupil Evaluation Program (PEP) tests, the Regents competency tests, and the Regents examinations.

The third is a by-product of national programs that identify outstanding pupils. These programs permit comparisons between New York State pupils and pupils in other states or in the United States as a whole. Two programs of the College Entrance Examination Board -- the Scholastic Aptitude Tests (SAT) and the achievement tests -- provide the best data of this type. Of more limited usefulness are the data obtained from the Advanced Placement Program, the National Merit scholarship competition, and the Westinghouse Science Talent Search.

In the sections that follow, the 1982-83 results for each available quality indicator are summarized and described.

## National Norms Study

Schools administering any of three commercially-published standardized tests -- the California Achievement Tests, the Iowa Tests of Basic Skills, and the Metropolitan Achievement Tests -- were invited to submit the scores their third and sixth grade pupils obtained on these tests and on the PEP tests in reading and mathematics in the spring of 1983. About 200 school districts responded, submitting more than 63,000 usable pairs of scores. The PEP test scores were then equated with the standardized test scores so that the achievement of New York State pupils could be compared with the achievement of pupils in the publishers' national norms samples. This study was similar to a study conducted in 1973. Table 1 shows the standing of the average New York State pupil in the national norms for both the 1973 study and the 1983 study.

Table 1: Percentile Rank in National Norms of the Average New York State Pupil in Grades 3 and 6

| Grade | Subject | Percentile Rank 1973 | 1983 | Change |
|---|---|---|---|---|
| 3 | Reading | 40 | 58 | +18 |
| | Mathematics | 49 | 65 | +16 |
| 6 | Reading | 50 | 61 | +11 |
| | Mathematics | 50 | 71 | +21 |

The table indicates that the level of achievement in reading and mathematics of New York State's third and sixth grade pupils improved significantly between 1973 and 1983. In 1973, New York State pupils were fairly typical of pupils nationwide in third grade mathematics and in sixth grade reading and mathematics. In third grade reading, they were relatively lower. In 1983, however, the average New York State pupil was above the average pupil nationwide in all four categories. The increase in percentile rank during this period ranged from 11 to 21. The highest level of achievement was found in sixth grade mathematics, where the average New York State pupil had a national percentile rank of 71.

## State Testing Programs

### Pupil Evaluation Program

The Pupil Evaluation Program was initiated in 1965 to provide data for use in planning, managing, and evaluating educational programs at both the State and local levels. With the advent of the Regents competency testing program, PEP test scores assumed new importance, because pupils scoring below a designated point -- the State Reference Point -- must be given remediation.

During 1982-83, the program involved the administration of reading and mathematics tests to pupils completing grades 3 and 6 and the administration of a writing test to pupils completing grade 5. Schools reported their scores to the Department, and the Department summarized the data and returned analyses to the schools.

Two major changes in the Pupil Evaluation Program were made during the 1982-83 school year. First, the replacement of norm-referenced tests with criterion-referenced tests was completed. Four of the five tests administered in the spring of 1983 were entirely new. Only the sixth-grade reading test, which was new in 1982, had been previously administered.

Second, the shift from fall testing to spring testing was completed. Again, only the sixth-grade reading test was administered in the spring during the 1981-82 school year.

Table 2 indicates the percentages of pupils scoring below the State Reference Points when the PEP tests were administered in the spring of 1983. Since the sixth-grade reading test is the only test previously administered, trends in pupil achievement can be observed only in sixth-grade reading. In 1982, 28 percent of the pupils in grade six were below the State Reference Point for reading. In 1983, this percentage was reduced to 25.

Table 2: Percentages of Pupils Scoring Below State Reference Points on the Spring 1983 PEP Tests

| Test | Percent Below State Reference Point |
|---|---|
| Grade 3 Reading | 25% |
| Mathematics | 23 |
| Grade 5 Writing | 20 |
| Grade 6 Reading | 25 |
| Mathematics | 26 |

Figure 1 shows the median for the sixth-grade reading test in Degrees of Reading Power (DRP) units. Because the sixth-grade reading tests have used the DRP methodology for the past four years, trends in the median can be observed despite changes in test forms and State Reference Points. Figure 1 indicates that the median has increased from 58 in the fall of 1979 to 63 in the spring of 1983. These medians are at the 70 percent level of comprehension. This means that the "typical" sixth-grade pupil in 1983 could answer correctly 70 of 100 questions based on a passage having a readability value of 63 DRP units.

Figure 1: Median in DRP Units on Sixth-Grade Reading Tests

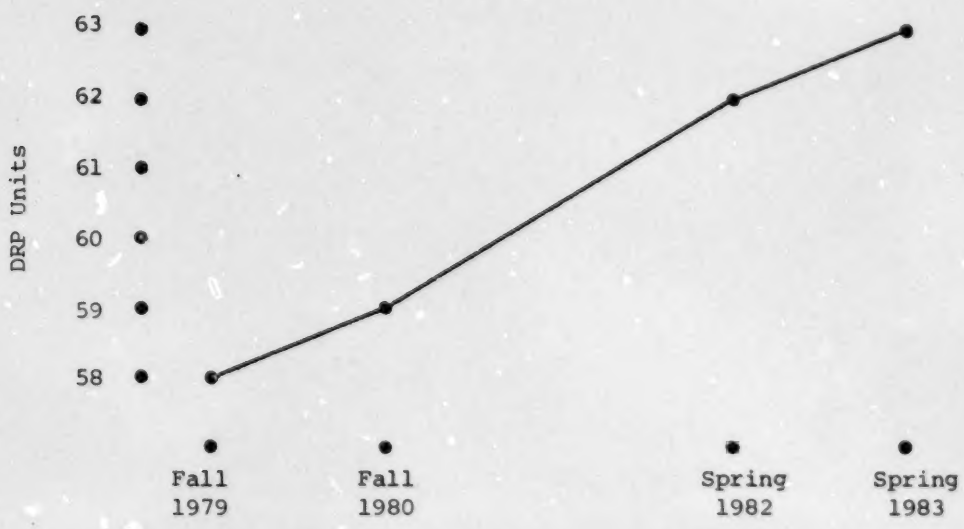


Table 3 provides PEP test results by school type for the previous six years. Wherever trend lines are not interrupted by programmatic changes, the table shows an improvement in third and sixth grade reading and mathematics test scores.

Table 3: Percentages of Pupils Scoring Above State Reference Points on PEP Tests, 1976-77 through 1981-82

| Type of School | Third-Grade Reading | | | | | | Third-Grade Mathematics | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1976-77 | 1977-78 | 1978-79 | 1979-80 | 1980-81 | 1981-82 | 1976-77 | 1977-78 | 1978-79 | 1979-80 | 1980-81 | 1981-82 |
| Public | | | | | | | | | | | | |
| New York City | 65% | 69% | 72% | 78% | 77% | 75% | 72% | 70% | 74% | 77% | 71% | 76% |
| Large City | 73 | 74 | 80 | 83 | 83 | 82 | 77 | 79 | 86 | 87 | 89 | 88 |
| Small City | 84 | 87 | 88 | 90 | 90 | 91 | 89 | 90 | 91 | 92 | 92 | 92 |
| Village-Suburban | 91 | 92 | 93 | 94 | 94 | 94 | 93 | 94 | 95 | 95 | 95 | 95 |
| Rural | 87 | 89 | 91 | 92 | 93 | 93 | 91 | 92 | 93 | 94 | 94 | 94 |
| Total Public | 81% | 83% | 85% | 87% | 87% | 87% | 85% | 85% | 88% | 89% | 87% | 88% |
| Nonpublic | | | | | | | | | | | | |
| New York City | 86% | 87% | 89% | 89% | 90% | 91% | 88% | 88% | 90% | 89% | 90% | 90% |
| Other | 91 | 92 | 93 | 94 | 95 | 95 | 93 | 94 | 95 | 95 | 95 | 95 |
| Total Nonpublic | 89% | 89% | 91% | 92% | 92% | 93% | 90% | 91% | 92% | 92% | 92% | 93% |
| COMBINED TOTAL | 82% | 84% | 86% | 88% | 88% | 88% | 86% | 86% | 88% | 89% | 88% | 89% |

| Type of School | Sixth-Grade Reading* | | | | | | Sixth-Grade Mathematics | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1976-77 | 1977-78 | 1978-79 | 1979-80 | 1980-81 | 1981-82 | 1976-77 | 1977-78 | 1978-79 | 1979-80 | 1980-81 | 1981-82 |
| Public | | | | | | | | | | | | |
| New York City | 53% | 54% | 58% | 40% | 40% | 48% | 49% | 50% | 51% | 54% | 54% | 55% |
| Large City | 58 | 60 | 64 | 44 | 48 | 63 | 57 | 59 | 70 | 72 | 74 | 73 |
| Small City | 74 | 75 | 77 | 62 | 65 | 76 | 70 | 71 | 73 | 74 | 76 | 76 |
| Village-Suburban | 82 | 83 | 84 | 73 | 75 | 83 | 79 | 79 | 81 | 82 | 83 | 83 |
| Rural | 80 | 80 | 82 | 70 | 72 | 82 | 76 | 76 | 77 | 79 | 81 | 80 |
| Total Public | 71% | 72% | 75% | 60% | 62% | 70% | 67% | 69% | 70% | 72% | 73% | 73% |
| Nonpublic | | | | | | | | | | | | |
| New York City | 76% | 77% | 79% | 61% | 62% | 77% | 72% | 73% | 74% | 75% | 76% | 77% |
| Other | 85 | 86 | 85 | 72 | 74 | 87 | 81 | 81 | 81 | 82 | 82 | 82 |
| Total Nonpublic | 80% | 81% | 82% | 66% | 68% | 82% | 76% | 77% | 78% | 78% | 79% | 80% |
| COMBINED TOTAL | 73% | 74% | 76% | 61% | 63% | 72% | 69% | 70% | 72% | 73% | 74% | 74% |

*Results are not comparable across vertical lines because of changes in the tests, reference points, and testing dates.

## Regents Examinations

For more than a century, Regents examinations have been a hallmark of high school education in New York State. Examinations are provided in 22 subjects, and more than a million papers are written during the January, June, and August examination periods. Almost sixty percent of the pupils in grades 9-12 take at least one Regents examination in a typical school year.

Regents examinations serve a number of purposes. They establish and maintain standards in the most-commonly studied high school subjects. They provide teachers with valid and reliable final examinations. They serve as good predictors of success in post-secondary education. They define important outcomes of instruction and help motivate pupil achievement.

The examinations are developed by classroom teachers in cooperation with the Department's subject and examination specialists. Each examination is based on a Department syllabus.

Table 4 lists the examinations provided in June 1983 and indicates, for each examination, the number of papers written and the percent of papers that received passing marks. Overall, 81.0 percent of the papers written were passing papers.

Table 4: Number of Papers Written and Percent Passing for the June 1983 Regents Examinations

| Subject | Number of Papers Written | Percent Passing |
|---|---|---|
| **Business Subjects** | | |
| Bookkeeping and accounting II | 8,055 | 68.2% |
| Business law | 14,386 | 82.6 |
| Business mathematics | 17,551 | 73.1 |
| Shorthand II and transcription | 7,007 | 77.4 |
| **English** | | |
| Comprehensive English | 129,175 | 84.9 |
| **Foreign Languages** | | |
| Comprehensive French | 19,567 | 91.2 |
| Comprehensive German | 3,184 | 92.0 |
| Comprehensive Hebrew | 1,950 | 94.5 |
| Comprehensive Italian | 4,225 | 88.5 |
| Comprehensive Latin | 2,571 | 79.1 |
| Comprehensive Spanish | 37,213 | 92.1 |
| **Mathematics** | | |
| Ninth year mathematics | 97,488 | 78.0 |
| Tenth year mathematics | 75,242 | 75.5 |
| Eleventh year mathematics | 60,660 | 81.5 |
| Sequential math, course I | 45,359 | 83.7 |
| Sequential math, course II | 27,631 | 83.4 |
| Sequential math, course III | 17,731 | 82.5 |
| **Science** | | |
| Biology (1967 Syllabus) | 100,789 | 80.4 |
| Biology (1982 Syllabus) | 15,856 | 77.8 |
| Chemistry | 74,882 | 82.0 |
| Earth science | 35,336 | 82.4 |
| Physics | 42,617 | 81.9 |
| **Social Studies** | | |
| Comprehensive social studies | 124,032 | 77.3 |
| **June Totals** | 962,507 | 81.0 |

Of the students graduating from high school in June 1983, 45.4 percent were awarded Regents diplomas. This is an increase over the percentage awarded Regents diplomas in June 1982, which was 43.8.

Regents Competency Tests

The Regents Competency Testing Program was established to assure that all pupils receiving high school diplomas have the reading, writing, and mathematics skills needed for employment and postsecondary education. About one-half of the pupils graduating from high school each year will demonstrate mastery of the basic skills by passing Regents examinations in English and mathematics. The other half will take the Regents competency tests in reading, writing, and mathematics.

The reading test is a Degrees of Reading Power test, as are the preliminary competency reading test and the third- and sixth-grade Pupil Evaluation Program reading tests. Degrees of Reading Power, or DRP, tests indicate the most difficult prose that a pupil can read with comprehension. They are criterion-referenced tests, and their pass marks are related to the readability of textbooks used at designated grade levels.

The writing test is a direct measure of a pupil's ability to organize and present ideas in written form. The test consists of three different types of writing tasks: a business letter, a report, and a composition. In the scoring of the test, each answer is rated on the basis of its total effect and overall quality.

The mathematics test is designed to measure competency in the skills described in the syllabus, "General High School Mathematics." This is the recommended high school mathematics curriculum for pupils not enrolled in Regents mathematics courses. The test questions cover the core areas of: integers and rational numbers, including the fundamental operations of addition, subtraction, multiplication, and division of whole numbers, decimals, and fractions; graphing, including critical analysis and interpretation of graphs and charts; measurement of geometric figures; ratio, proportion, and percent; probability and statistics; and consumer and job-related mathematics.

Pupils take the Regents competency test in mathematics when they complete the prescribed course. For the vast majority of students, the test is taken initially at the end of grade nine. The reading and writing tests are intended to assess skills acquired during the high school years, and the tests may not be taken prior to the eleventh grade. Hence, most students take these tests initially in January of their junior year, although some are tested initially at the end of the junior year. Table 5 shows the results for these major administrations during the 1982-83 school year.

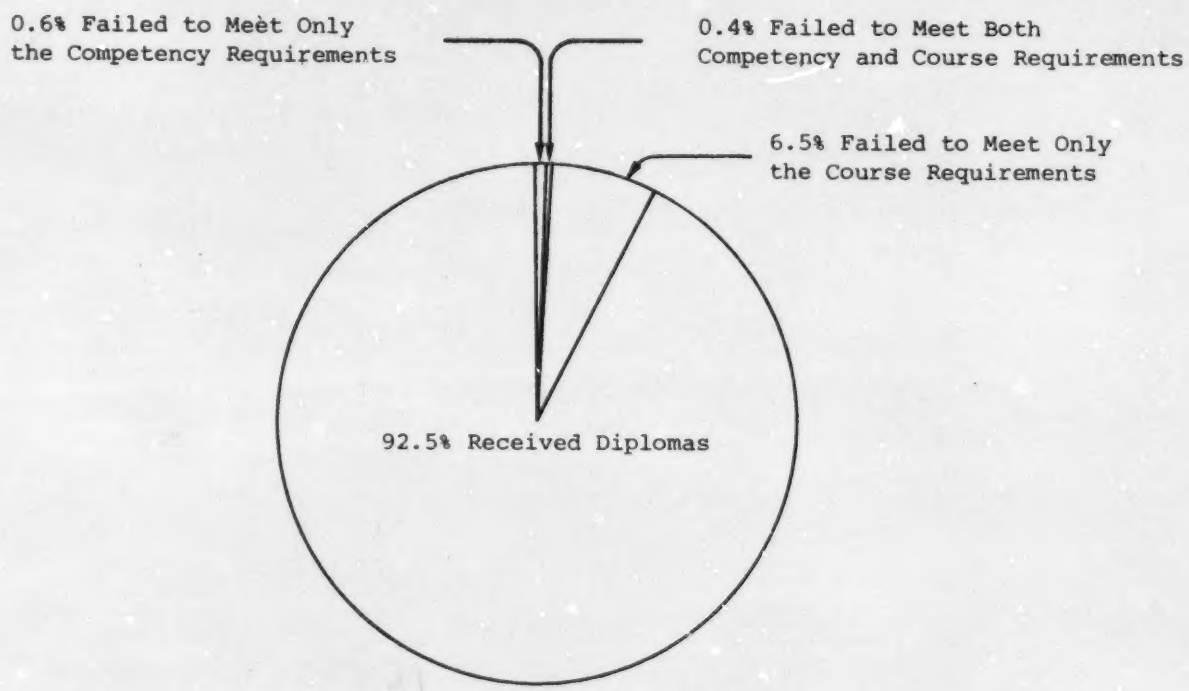
The mathematics test proved to be the most challenging. Only 75.3 percent of about 90,000 ninth-grade pupils passed the mathematics test in June 1983. Approximately 106,000 juniors took the reading and writing tests in January 1983; 93.9 percent passed the reading test, and 82.8 percent passed the writing test. Under the Commissioner's Regulations, pupils failing any competency test must be provided appropriate remediation.

Table 5: Number of Papers Written and Percent Passing for the Major Administrations of the Regents Competency Tests in 1983

| Competency Test | Grade | Number of Papers Written | Percent Passing |
|---|---|---|---|
| January 1983 | | | |
| Reading | 11 | 106,723 | 93.9% |
| Writing | 11 | 105,623 | 82.8 |
| June 1983 | | | |
| Reading | 11 | 17,376 | 82.4 |
| Writing | 11 | 27,881 | 64.5 |
| Mathematics | 9 | 90,180 | 75.3 |

The competency testing requirement prevented few pupils from receiving high school diplomas in June 1983. Ninety-nine percent of the candidates for graduation in June 1983 met the competency testing requirements. As illustrated in Figure 2, only 0.6 percent of the candidates failed to graduate solely because of the competency testing requirements. Another 0.4 percent failed to meet the competency testing requirements but also failed to meet course requirements. In all, only about 2,000 of the 210,000 diploma candidates failed to attain the standards in all three basic skills.

**Figure 2:** Candidates for High School Diplomas in June 1983


0.6% Failed to Meet Only the Competency Requirements
0.4% Failed to Meet Both Competency and Course Requirements
6.5% Failed to Meet Only the Course Requirements
92.5% Received Diplomas

## National Programs

### Scholastic Aptitude Tests

As part of its Admissions Testing Program, the College Entrance Examination Board administers Scholastic Aptitude Tests (SAT's) to about one million college-bound seniors each year. SAT scores are used by many colleges to assist them in selecting candidates for admission.

There are two SAT's, a verbal test and a mathematical test. The verbal test measures vocabulary and reading comprehension skills. The mathematical test measures the ability to solve problems involving arithmetic reasoning, algebra, and geometry. The abilities measured by both tests are developed over years of study and use, both in and out of school.

Figures 3 and 4 illustrate the trends in SAT scores over the past seven years. During this period, both the State and national averages remained relatively stable, following a sharp decline over the preceding fourteen years. During the past six years, New York's average score on each test has been within approximately two points of the national average score. This average difference is extremely small in comparison to the range of state averages, which is about 150 points.

New York's average scores for 1983 were slightly lower than the national averages. On the verbal test, New York's average score was 422; the national average score was 425. On the mathematical test, New York's average score was 466; the national average score was 469.

However, the percent of seniors taking the SAT's in New York State was almost twice the national average. New York's 135,000 examinees comprise 61 percent of the senior class, the fourth highest percentage among the states. Nationwide, only 32 percent of the seniors were tested. Thus, the average SAT scores earned by virtually all college-bound seniors in New York were about the same as those earned by a select group of college-bound seniors nationwide. This is a significant indicator of this State's educational quality.

Figure 3: New York State and National Average Scores on the SAT-Verbal, 1977-1983

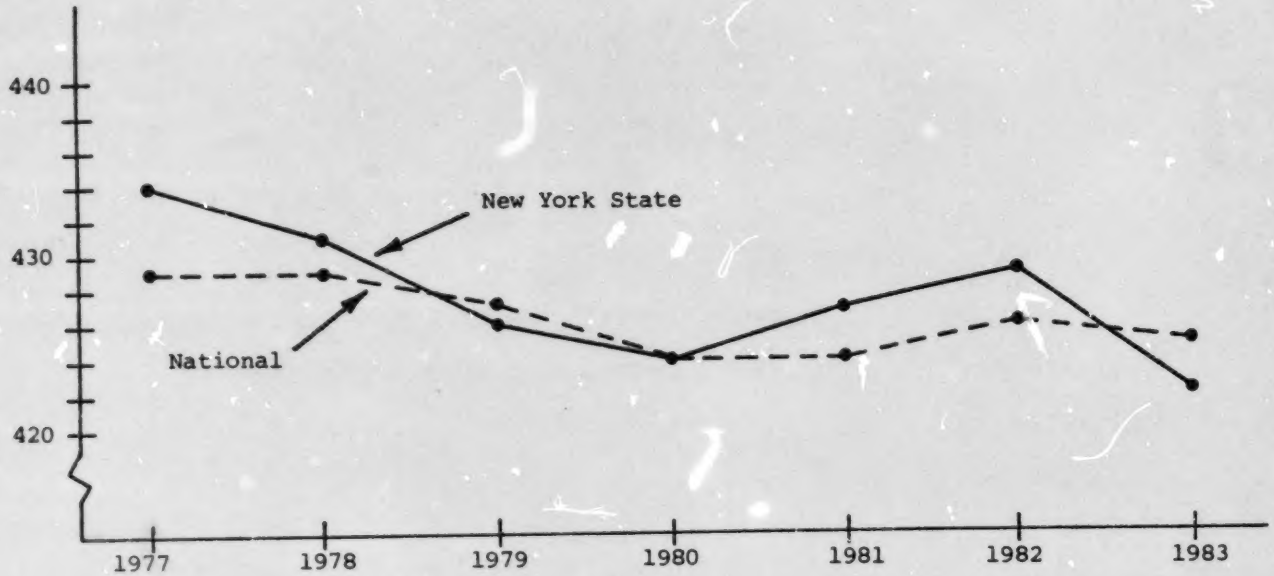
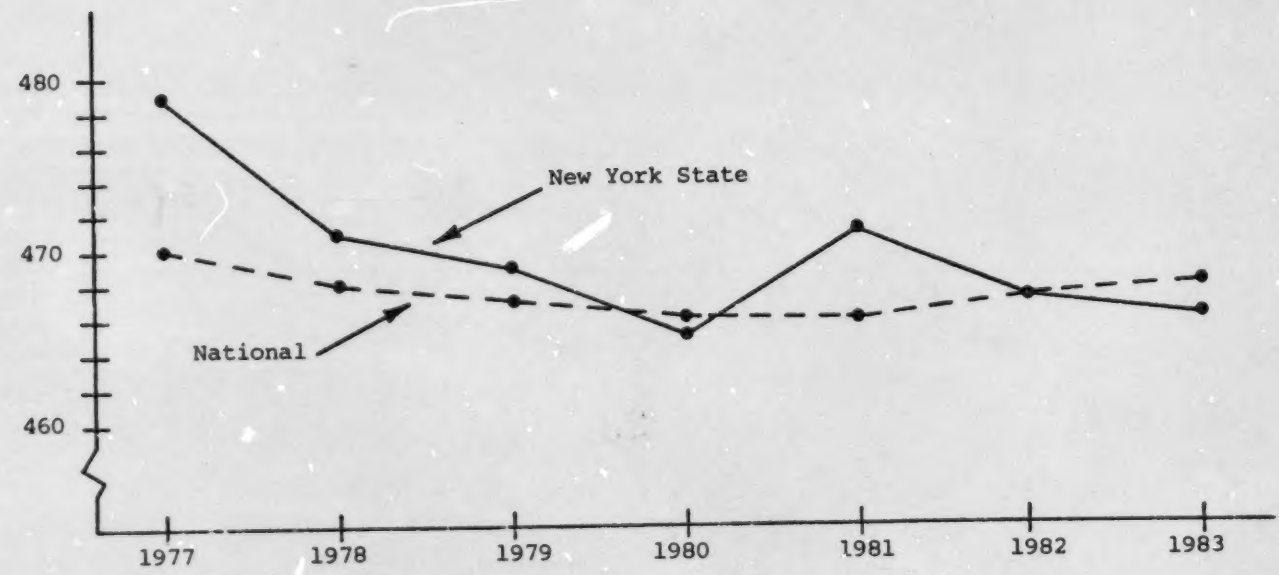



Figure 4: New York State and National Average Scores on the SAT-Mathematical, 1977-1983



College Board Achievement Tests

The College Board's Admissions Testing Program also includes achievement tests, which are required by some colleges to supplement the SAT's. The achievement tests are rigorous tests and are offered in 14 different subject areas.

New York State students have always performed extremely well on the achievement tests, and 1983 was no exception. Table 6 indicates that the average score earned by New York's college-bound seniors on all tests combined was 18 points higher than the national average. New York's advantage ranged from 40 points in American History, 35 points in biology, and 34 points in Mathematics Level 1, to 6 points in English composition.

Table 6: Comparison of New York State and National Averages on College Board Achievement Tests, 1983

| Achievement Test | Average Score | | |
|---|---|---|---|
| | NYS | National | Difference |
| English Composition | 524 | 518 | + 6 |
| Mathematics Level 1 | 577 | 543 | +34 |
| Biology | 579 | 544 | +35 |
| Chemistry | 596 | 569 | +27 |
| American History | 556 | 516 | +40 |
| Mathematics Level 2 | 668 | 655 | +13 |
| Spanish | 557 | 533 | +24 |
| French | 565 | 548 | +17 |
| Physics | 612 | 595 | +17 |
| Literature | 534 | 523 | +11 |
| European History | 573 | 549 | +24 |
| German | 585 | 567 | +18 |
| Hebrew | 653 | 627 | +26 |
| Latin | 562 | 550 | +12 |
| All Tests Combined | 555 | 537 | +18 |

NOTE: Listed in order of numbers written in New York State

Other Programs

While the College Board's Admissions Testing Program allows comparisons only with a national average, which includes New York's scores, there are three nationwide programs in which New York can be compared directly with each of the other states. They are the Advanced Placement Program, the National Merit Scholarship Program, and the Westinghouse Science Talent Search.

The Advanced Placement Program of the College Board consists of courses of study and examinations in 23 subjects through which high school pupils may earn college credit and placement at more than 1,850 postsecondary institutions throughout the country. About 160,000 pupils nationwide participated in this program last year.

The National Merit Scholarship Program is the nation's largest independently financed competition for college undergraduate scholarships. Each year more than one million pupils take the Preliminary Scholastic Aptitude Test/National Merit Scholarship Qualifying Test to enter the scholarship competition. About 35,000 are commended for their performance and 15,000 are named Semifinalists.

The Westinghouse Science Talent Search is an endeavor to discover among high school seniors those

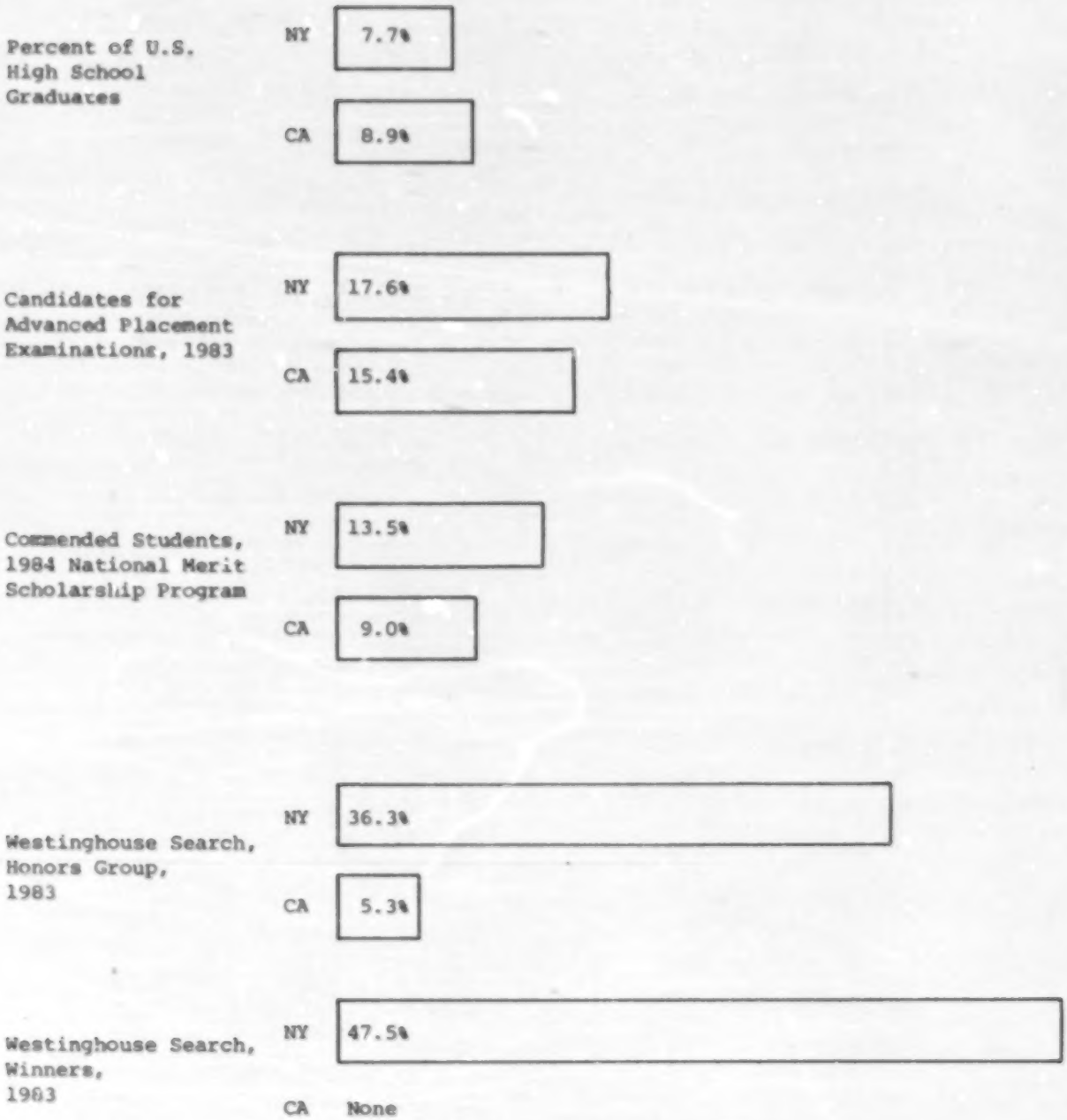
who have the potential to become the research scientists and engineers of the future. The competition involves the judging of entries submitted by more than 800 contestants. Winners of this competition, as well as those in the Honors Group, are frequently offered scholarships by colleges and universities.

New York State consistently holds a preeminent position in these three national programs. The most recent results are illustrated in Figure 5, which compares New York State pupils with pupils from California, the second ranking state in each instance.

Although New York had a smaller percentage of the nation's high school graduates -- 7.7 percent as opposed to California's 8.9 percent -- New York had a higher percentage of pupils on each significant indicator of quality.

- Advanced Placement: New York had 17.6 percent of candidates for Advanced Placement examinations; California had 15.4 percent.
- National Merit: New York had 13.5 percent of the Commended Students; California had 9.0 percent.
- Westinghouse: New York pupils comprised 36.3 percent of the Honors Group and 47.5 percent of the winners; California's pupils made up only 5.3 percent of the Honors Group; none of the winners was from California.

Figure 5: Advanced Placement, National Merit, and Westinghouse Science Talent Search: New York and California Compared



## Summing Up

During the 1982-83 school year, New York State's elementary and secondary school students achieved consistently good results on a wide variety of quality indicators. Of particular note was their success in meeting the competency testing requirements for a high school diploma, reflecting a positive response to the Regents Competency Testing Program by the State's public and nonpublic schools.

At the same time, it must be recognized that averages do not reveal the wide range of student achievement that exists at every grade level. There are students whose achievement is far above the average, and there are students whose achievement is far below. While there is much to be done before every student can be assured of receiving a quality education, there is evidence that progress is being made and that further gains can be expected.